Amrit Singh
Dr. Scott Period 3

2a) Linearity: **Residual plots are useful**. A curved pattern in residuals suggests non-linearity.
2b) Constant Variance: **Residual plots are useful**. A "fan shape" indicates heteroscedasticity (non-constant variance).
2c) Independence: **Residual plots are not helpful**. Independence violations (like autocorrelation in time series) are better detected with specialized plots/tests (Durbin–Watson, lag plots), not residual vs. fitted plots.
2d) Zero Mean: **Residual plots help**. Residuals should scatter around zero; systematic bias indicates violation.

3) The regression equation is: Weight = 1.37 + 0.467(WingLength). The slope is **0.467**.

5) Weight = 1.37 + 0.467(WingLength) → Interecept = **1.37**

7) For each additional millimeter of wing length, the predicted sparrow weight increases by about 0.467 grams on average.

9) The regression standard error **S = 1.39959** (from the output).

11) The degrees of freedom for the regression standard error are **114**. This comes from n-2 (since simple linear regression estimates 2 parameters: slope + intercept). Here n = 116, so 116 - 2 = 144.